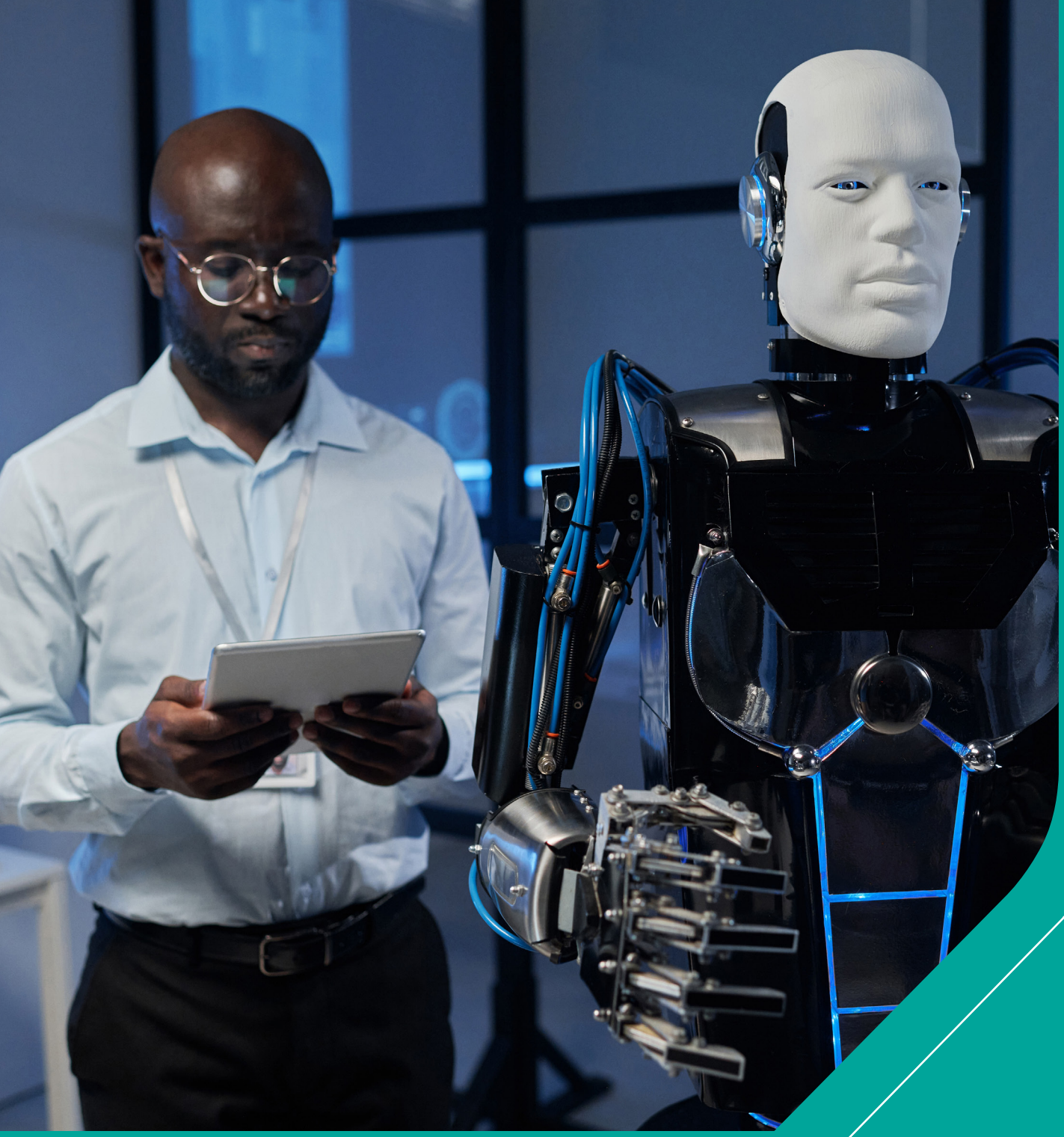


# Enhancing Artificial Intelligence Publications on Global Health Research from Africa

SCIENCE FOR AFRICA FOUNDATION

Project led by Dr Uzma Alam, Programme Lead of the Science Policy Engagement with Africa's Research (SPEAR) programme.

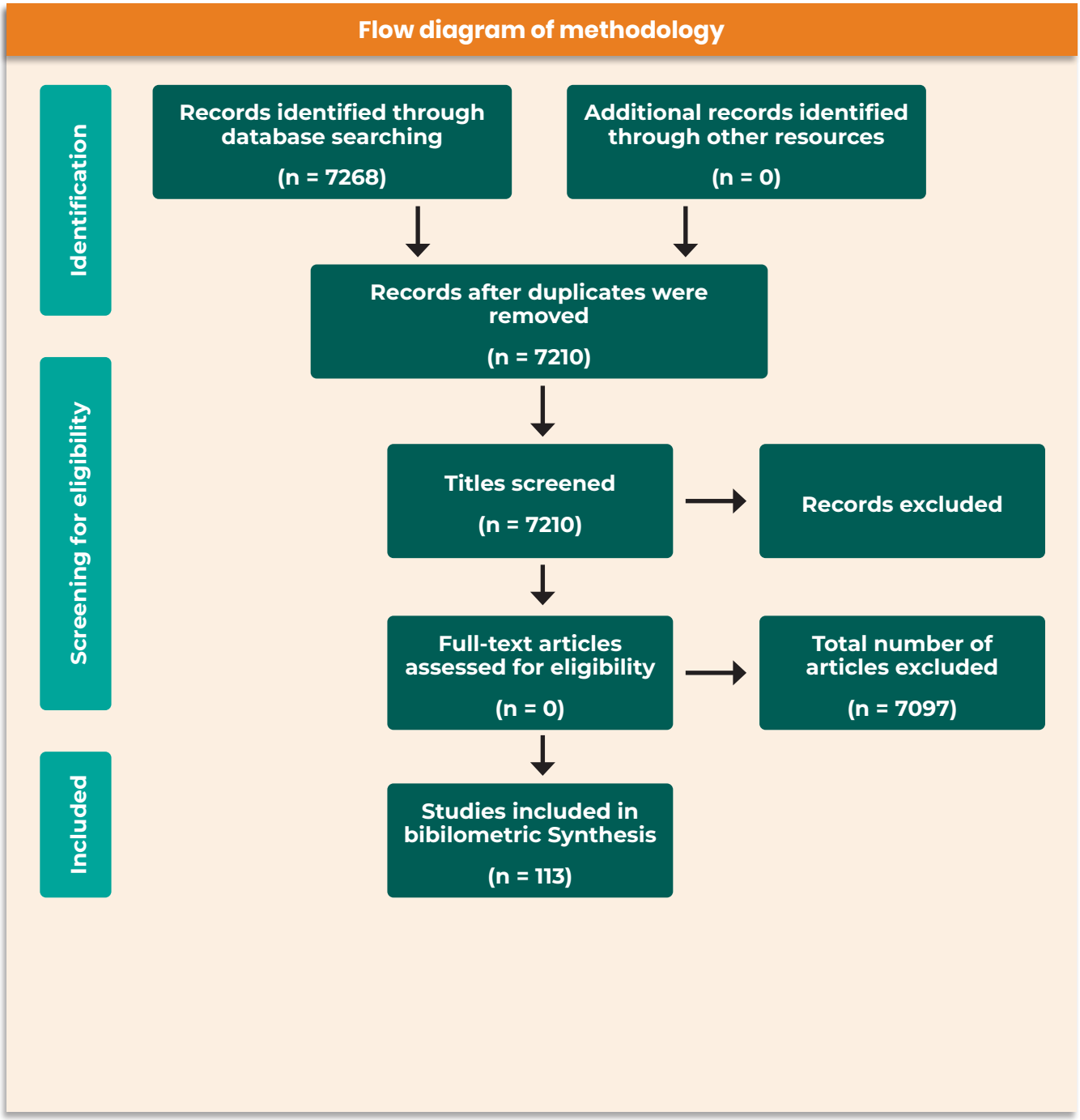
ScienceforAfricaFoundation

## Background

Arti cial Intelligence (AI) has immense potential to transform global health as applied to diagnostics, healthcare delivery and public health management. This policy brief uses bibliometric analysis to summarise AI research in global health from authors across Africa and contextualises findings within the broader research landscape. It offers a robust literature comparison and proposes strategies to enhance and promote better integration of Africa into global science output.

## Methodology

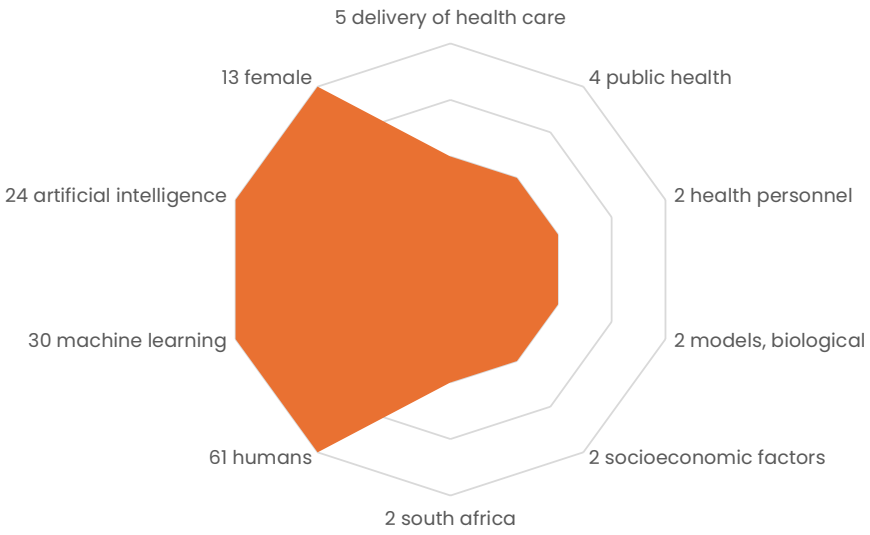
An extensive search of PubMed over the last ten years was conducted. Titles were screened to include only studies that use AI and data science in global health in Africa. Analysis and thematic mapping examined journal sources and the location of corresponding authors to create a thematic map of AI and data science in global health worldwide (using the RStudio (version 4.3.1) (Aria 2017).



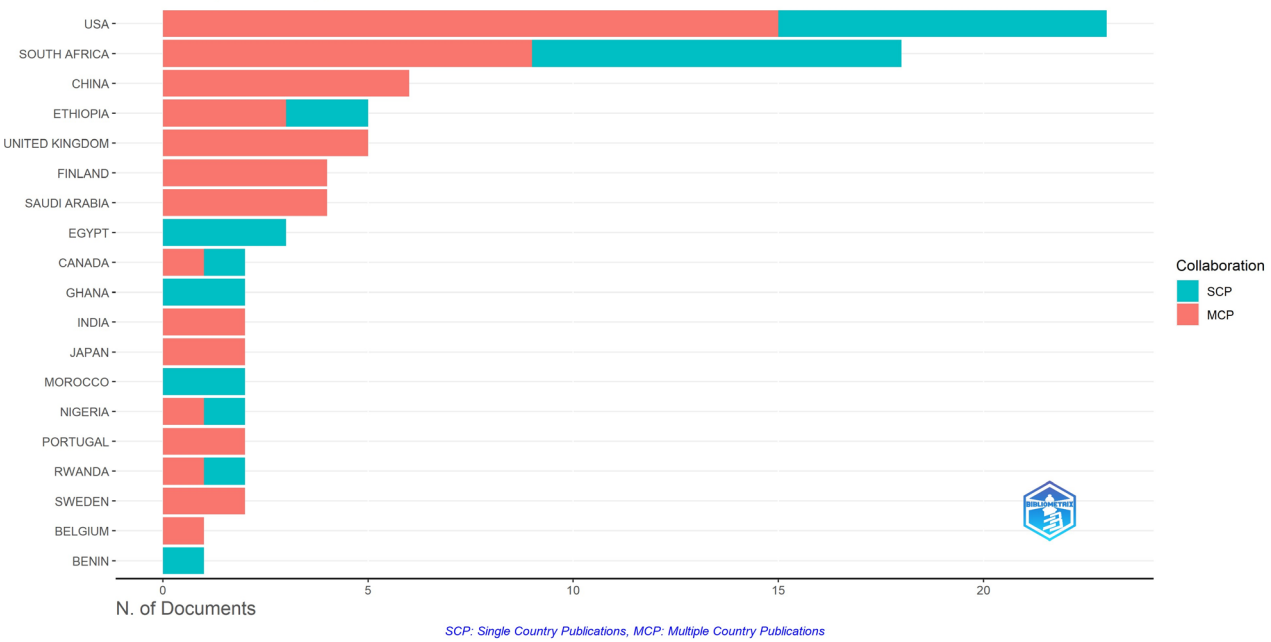
## Key Findings

- The USA leads significantly with the highest number of publications, indicating a strong presence in AI and global health research.
- South Africa is the most prolific African country in this area, publishing a signi cant volume, though much less than the USA.
- South Africa produced a balanced mix of Single-Country Publications (SCP) and Multiple-Country Publications (MCP), indicating strong local and international collaborations.
- Ethiopia shows significant activity in both SCP & MCP.
- Egypt has more MCPs than SCPs, indicating active international collaboration.
- Nigeria, Ghana, Morocco and Rwanda are represented but with less output, indicating their emerging involvement in the research landscape.
- Benin is starting to publish in this area, indicating the potential for AI and global health research growth.
- Increased number of publications by African authors in open-access journals from 2016 to 2023, highlighting increased research output and influen e
- AI applications in healthcare are heavily associated with COVID-19 and other pandemic-related research.
- There is significant emphasis on human-centered research, machine learning, and female-related health issues.

**Thematic map:** Conceptual structure showing the thematic map on artifi ial intelligence & data science research in global health

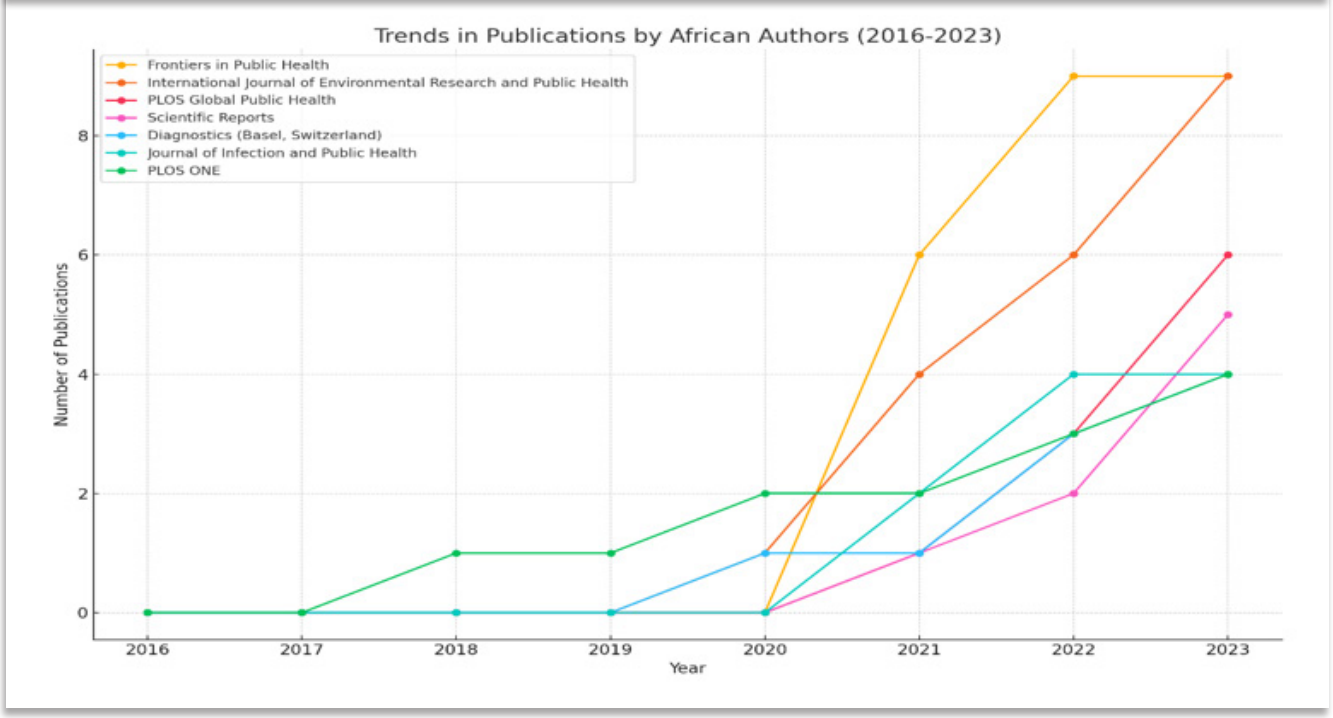



**Authoring:** Corresponding Author's Countries




*SCP: Single Country Publications, MCP: Multiple Country Publications*

## Thematic map




## Factors influencing increased AI publications from Africa

Several factors impact where authors in Africa publish their work: cost of publication, impact factors, accessibility, etc.

The increase in AI publications from African authors could be linked to increased funding and strategic initiatives. Funding grew from $500,000 in 2018 to $3.5 million in 2023, while publications increased even more relative to funding, from 2 to 40 in the same period.

The establishment of national AI research agendas and centers of excellence could drive the increase in AI publications from African authors. For example, South Africa and Egypt, with more advanced AI strategies, show higher publication outputs. Emerging AI efforts in Ethiopia and Nigeria are also beginning to increase research activity and publications.

**$3.5 million**

**Amount in funding in 2023. Funding grew from $500,000 in 2018**

**40**

**Number of publications relative to funding from 2 - 40 from 2018 to 2023**

## Recommendations to Grow AI Global Health Research in Africa

### 1. Leveraging Resources

- Regional Networks & Centres of Excellence: promote the formation of regional research networks and centers of excellence dedicated to AI research focused on health applications tailored to address Africa's unique health challenges.
- Global Partnerships and Diaspora Networks: engage in international collaboration and utilise diaspora networks to facilitate knowledge transfer and collaboration.
- Talent Repatriation: create programmes to attract African researchers and scientists in the diaspora to return to the continent to contribute more directly to local research initiatives.
- Industry Collaboration: foster partnerships between academia and industry to drive research with practical applications and market relevance.
- Link R&D to regulation: Create regulator sandboxes.
- Create innovative funding instruments to support AI R&D : such as social bonds, equity instruments, blended finan e.
- Continue and Increase Funding for Human-centered AI Research: ensure that technological advancements benefit individuals and ommunities directly.
- Strengthen Existing African Regional Data Sharing and Collaboration Frameworks, e.g., ratification of the Malabo Convention.

### 2. National Research & Development (R&D) Agendas

- Tailored R&D Priorities: develop national research agendas prioritising AI and global health, ensuring alignment with local health needs and challenges.
- Inclusive Research: ensure that AI health projects include assessments of their socioeconomic impacts to ensure that solutions are sustainable and benefi ial for all socio-economic groups.
- Stakeholder Involvement: work with communities and stakeholders in the research process to ensure relevance and local acceptance of research outcomes.
- Harnessing Endogenous Knowledge: integrate local and indigenous knowledge into AI health R&D and governance policies. Integrate these perspectives in the development, implementation, and monitoring of AI health initiatives.
- Develop National AI Strategies.

### 3. Linking R&D With Policy & Governance

- Incentives for R&D: provide tax incentives, grants, and subsidies to encourage private sector investment in health-related AI research.
- Regulatory Support: simplify regulatory processes for research approvals and ethical clearances to streamline research activities.
- Reinforce Science Diplomacy: enhance efforts to use science diplomacy for socio-economic development through AI. Ensure African representation in bilateral and multilateral agreements such as international data sharing agreements, IP, equitable access, etc. Also, build cooperation around AI governance and R&D in global health.
- Promote Open Access: advocate for open access to AI research data repositories, following models prioritizing community versus commercialisation, such as those in Latin America.
- Science Envoy Creation: appoint science envoys who can represent countries in international forums, advocate for global health priorities, and facilitate cross-border collaboration on AI initiatives.
- Science Policy Platforms: create platforms for AI researchers and practitioners to interact with policymakers and legislators. Platforms to also include local knowledge.

## Conclusion

This analysis confi ms previous studies that Africa is underrepresented in AI research. However, it also provides a more detailed breakdown of individual country contributions within Africa. Additionally, while other studies have noted international collaboration, this document emphasises the high rate of multi-country collaborations involving African researchers, suggesting a strong network despite limited resources.

By leveraging strategic resources, driving national R&D agendas, and linking R&D with innovation, policy and governance, African nations can advance AI in health, positioning themselves as key players in the global research landscape. By implementing these recommendations, African countries can significantly enhance their AI and global health research output. This will increase the number of publications from the continent and ultimately enhance AI's impact on addressing global health challenges.

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## List of Contributors

| Name | Institution |
|---|---|
| Uzma Alam | Science for Africa Foundation. |
| Phoebe A. Ganola | Science for Africa Foundation. |
| Duduzile.Ndwandwe | Cochrane South Africa/ South African Medical Research Council. |
| Anelisa Jaca | Cochrane South Africa/ South African Medical Research Council. |

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